El Paso Natural Gas Company, L.L.C.
a Kinder Morgan company

EL PASO NATURAL GAS COMPANY, L.L.C.
DRAGOON COMPRESSOR STATION
Cochise County, Arizona

Air Quality Class I Permit Revision Application

APRIL 2018

AIR QUALITY CLASS I PERMIT 61325 REVISION APPLICATION
EL PASO NATURAL GAS COMPANY, L.L.C.
DRAGOON COMPRESSOR STATION
COCHISE COUNTY, ARIZONA

Prepared for:

El Paso Natural Gas Company, L.L.C.
5151 E Broadway Blvd, Suite 1680
Tucson, Arizona 85711

Prepared by:

SWCA Environmental Consultants
20 East Thomas Road, Suite 1700
Phoenix, Arizona 85012
www.swca.com

SWCA Project No. 43780

April 2018

CONTENTS

List of Tables

List of Figures

INTRODUCTION

El Paso Natural Gas Company, L.L.C. (EPNG) is seeking authorization from the Arizona Department of Environmental Quality (ADEQ) to construct and operate a new natural gas compressor station near the city of Willcox in Cochise County, Arizona. The construction of the proposed site is part of the South Mainline Expansion Project, which includes planned construction in Arizona, New Mexico, and Texas.

The new facility will be designated the Dragoon Compressor Station, and will be constructed northeast of EPNG's existing Willcox Compressor Station (currently permitted under ADEQ Class I permit #61325). Although these two facilities will be located on the same land parcel, they have different purposes, and will operate independently of one other. The proposed Dragoon compressor station will be dedicated toward mainline compression on the existing transmission pipelines, whereas the existing Willcox Compressor Station will continue to provide compression on the lateral pipeline branching off of the mainline, servicing customers in Mexico. Construction of the Dragoon Compressor Station is being requested as a Significant Revision to the existing ADEQ Class I permit #61325.

The Dragoon Compressor Station will consist of a centrifugal compressor driven by a natural gas-fired combustion turbine, an emergency electrical generator driven by a natural gas-fired reciprocating internal combustion engine, and other ancillary equipment, considered to be insignificant. Construction of the station is planned to commence by October 2019, so that it may be placed in service by July 1, 2020.

EPNG has prepared this Class I permit revision application in accordance with the requirements of Title 18, Chapter 2 of the Arizona Administrative Code (A.A.C.).

This application includes the following sections:

- Attachment A provides the required Standard Application Form.
- Attachment B provides a detailed description of each process at the facility.
- Attachment C provides a flow diagram for all processes and plot plans.
- Attachment D provides the Equipment List.
- Attachment E provides the Emission Source Form.
- Attachment F provides the emission calculations for all emission units at the facility.
- Attachment G provides a determination of Minor NSR applicability.
- Attachment H provides a review of applicable air quality regulations.
- Attachment I provides the Application Administrative Completeness Checklist.
- Attachment J provides the detailed emission calculations.
- Attachment K provides supporting technical documentation.

ATTACHMENT A – STANDARD APPLICATION FORM

SECTION 2.1
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338

STANDARD CLASS I PERMIT APPLICATION FORM
(As required by A.R.S. § 49-426, and Chapter 2, Article 3, Arizona Administrative Code)

1. Permit to be issued to (Business license name of organization that is to receive permit):
   El Paso Natural Gas Company, LLC

2. Mailing Address: 5151 E Broadway Blvd Ste 1680
   City: Tucson State: Arizona ZIP: 85711

3. Name (or names) of Owners/ Principals: Philip L. Baca
   Phone: 520-663-4224 Fax: 520-663-4284 Email: philip_baca@kindermorgan.com

4. Name of Owner's Agent: Bill Jamieson, Director Air Quality, SWCA Environmental Consultants
   Phone: 602-274-3831 Fax: 602-274-3958 Email: bjamieson@swca.com

5. Plant/Site Manager/ Contact Person and Title: Don Cantrell, Plant Manager
   Phone: 520-574-4924 Fax: 520-574-4948 Email: donald_cantrell@kindermorgan.com

6. Plant Site Name: Dragoon Compressor Station

7. Plant Site Location Address: Arzberger Road, 6 miles E of Kansas Settlement Road
   City: Willcox County: Cochise Zip Code: 85643
   Indian Reservation (if applicable, which one): N/A
   Latitude/ Longitude, Elevation: 32° 06' 32" N, 109° 39' 43" W; 4,467 ft
   Section/ Township/ Range:

8. General Nature of Business: Natural Gas Transmission

9. Type of Organization:
   ☐ Corporation ☐ Individual Owner ☐ Partnership ☐ Government Entity (Government Facility Code:-----)
   ☒ Other LLC

8. Permit Application Basis: ☒ New Source ☐ Revision ☐ Renewal of Existing Permit
   (Check all that apply.)
   For renewal or modification, include existing permit number (and exp. date): N/A
   Date of Commencement of Construction or Modification: October 2019
   Primary Standard Industrial Classification Code: 4922

9. I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by ADEQ as public record. I also attest that I am in compliance with the applicable requirements of the Permit and will continue to comply with such requirements and any future requirements that become effective during the life of the Permit. I will present a certification of compliance to ADEQ no less than annually and more frequently if specified by ADEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with Arizona Administrative Code, Title 18, Chapter 2 and any permit issued thereof.
   Signature of Responsible Official: Philip L Baca
   Official Title of Signer: Director
   Typed or Printed Name of Signer: Philip L. Baca
   Date: 3-19-18 Telephone Number: 520-663-4224

ATTACHMENT B – PROCESS DESCRIPTION

EPNG owns and operates a large pipeline network and provides natural gas transportation services for natural gas suppliers and end users throughout the southwestern United States and Mexico.

The existing Willcox Compressor Station (Place ID #2254) currently provides natural gas compression along a pipeline lateral via two (2) centrifugal compressors in a parallel configuration, each driven by a natural gas-fired combustion turbine. The combustion turbines are operated on an as-needed basis, based on demand, and may operate continuously.

EPNG intends to construct the new Dragoon Compressor Station near the existing Willcox Compressor Station. The facilities will operate independently of each other. The proposed Dragoon Compressor Station will provide mainline compression and will be comprised of a centrifugal compressor driven by a natural gas-fired combustion turbine, an emergency generator, and other ancillary equipment, considered to be insignificant.

Primary electric power for the proposed Dragoon Compressor Station will be purchased grid power. An emergency generator will be maintained on site for use during power outages. Due to the unattended and automated status of the proposed station, the emergency generator will start in response to control signals and will ramp up to service duty with no extended time at idle. Similarly, once the demand for emergency power has ended, the engine will ramp down and shut off, with no extended time at idle.

The existing Willcox Compressor Station currently has a potential to emit (PTE) greater than the major source threshold of nitrogen oxides (NO_x) and is therefore considered to be a Major source. The proposed natural gas-fired turbine, associated with the planned Dragoon Compressor Station, will be the primary source of the increase in air pollutants.

A process flow diagram for the proposed compressor station is provided in Attachment C, and includes all new sources subject to federal standards, or not considered to be insignificant. Also included in Attachment C are two (2) plot plans showing varying amounts of detail.

ATTACHMENT C – PROCESS FLOW DIAGRAM AND PLOT PLANS

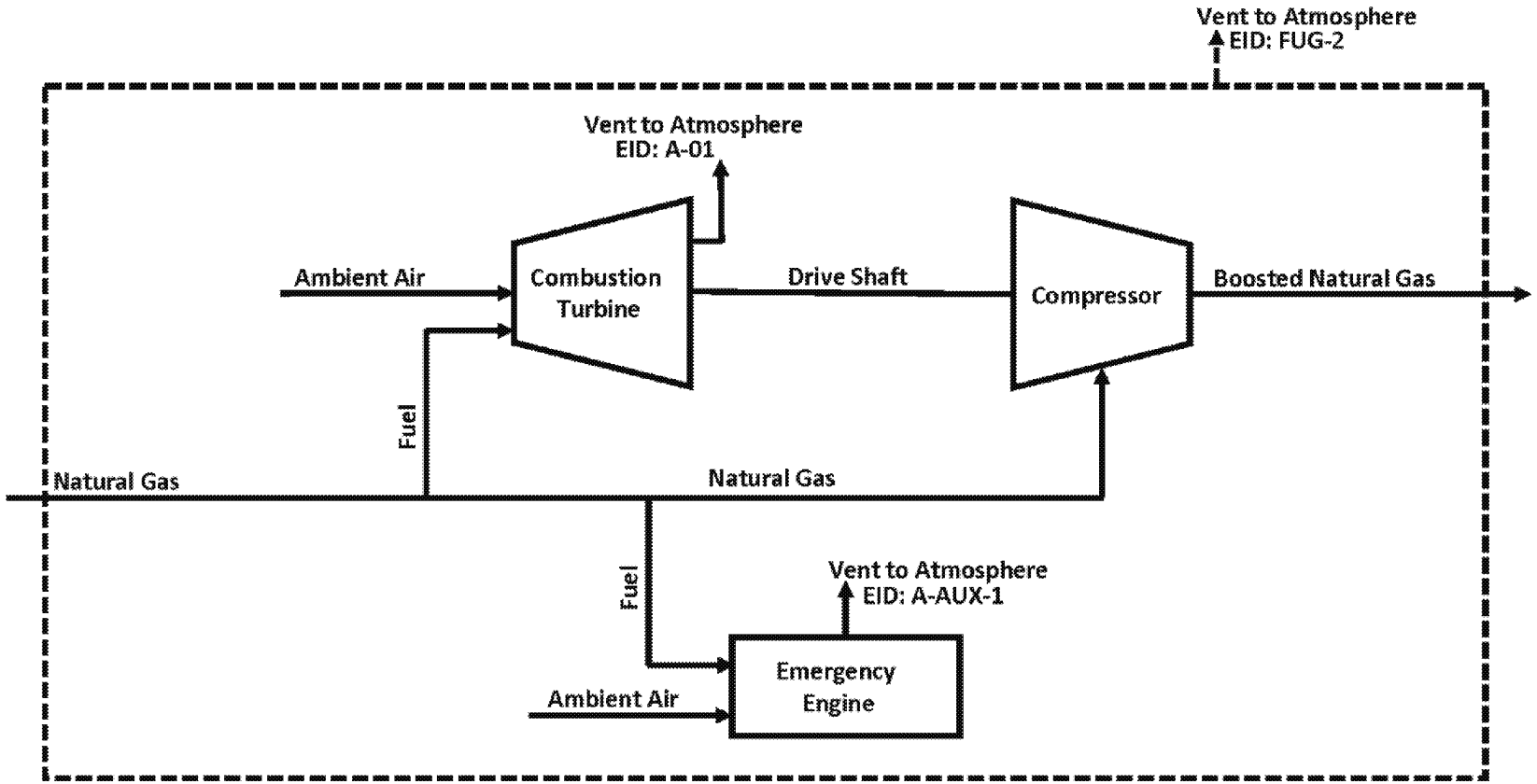
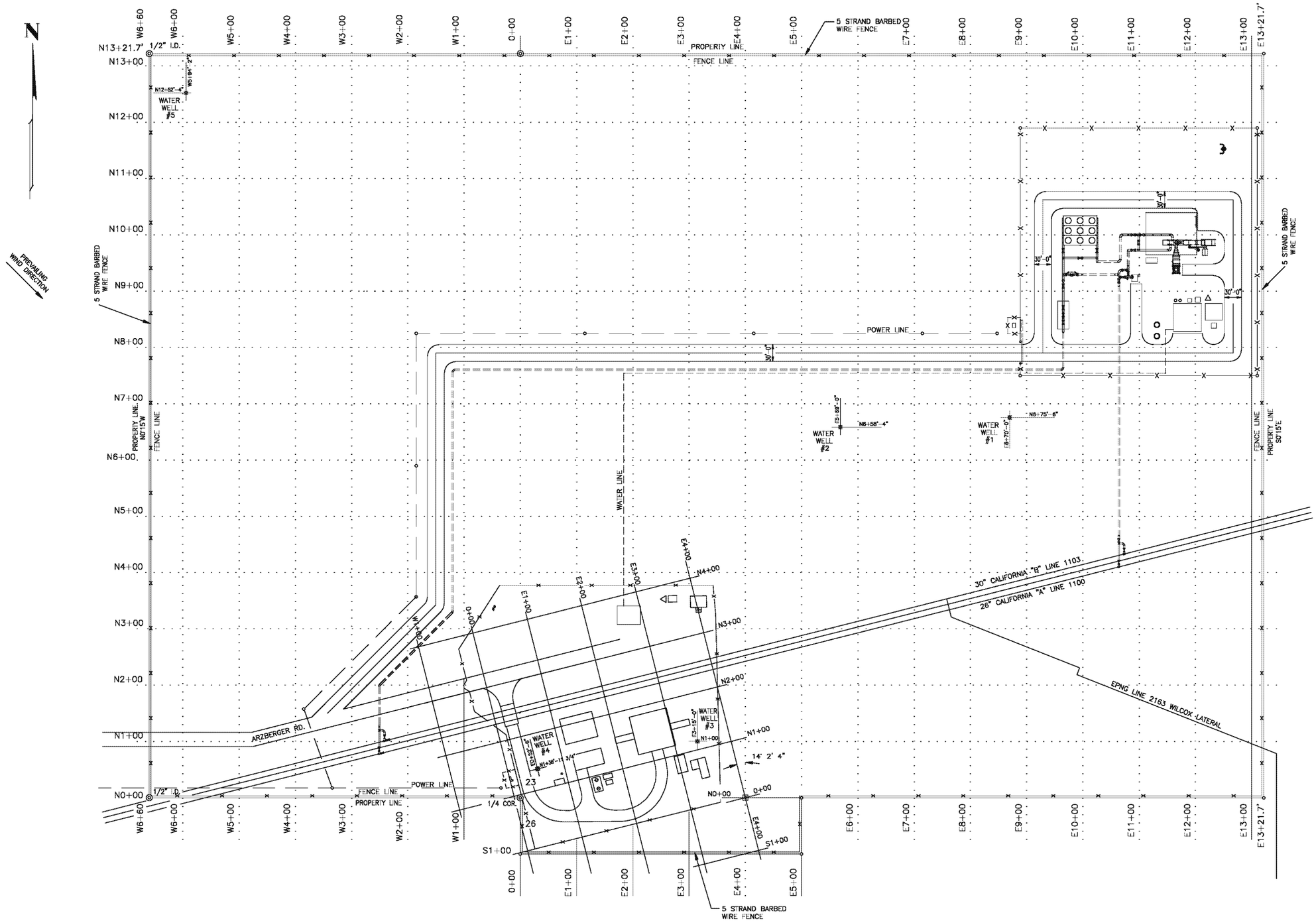


Figure C-1. Process Flow Diagram – Dragoon Compressor Station



:Reference Drawings

DRAGOON COMPRESSOR STATION :Facility Name

A	PRELIMINARY		3-2-2018
NO.	Revision Description	Project ID	Date

Notes:

Figure C-2. Plot Plan - Complete Facility

KINDER MORGAN

EL PASO NATURAL GAS

PROJECT

EPNG SOUTH MAINLINE EXPANSION PROJECT

PLOT PLAN
PROPOSED DRAGOON COMPRESSOR STATION SITE

Status:	PRELIMINARY
State: ARIZONA	PIN No:
County: COCHISE	Scale: NTS
Category: SITE PLAN	
File Name: DRAGOON.DWG	
Drawing No: DRAGOON	Rev A

Verification: Mar 06, 2018 - 08:09:16

N

PREVAILING WIND DIRECTION

N1+00

POWER LINE

MAIN LINE VALVES

LINE 1103

LINE 1100

SECURITY FENCE

5 STRAND BARB WIRE FENCE

ESD/BLOWDOWN SILENCER & STACK

30'-0"

H.P. GAS COOLERS

COMPRESSOR BLDG. 75'x90'x45'

ROLL UP DOOR

INTAKE

LUBE OIL COOLER

FUEL GAS SKID

EXHAUST STACK

STAND BY GENERATOR EXHAUST

STATION RECYCLE

INLET FILTER SEPARATOR

INSTRUMENT AIR

UTILITY AIR

GENERATOR COOLER

COMMUNICATION TOWER

TRANSFORMER

POWER POLE

STATION METER

USED OIL TANK

LUBE OIL TANK

CONTROL BLDG. 50'x50'x16'

LEACH FIELD

SEPTIC TANK

NEW ROAD

30' ROLLING GATE

WATER LINE

N6+75'-6"

WATER WELL #1

E8+70'-0"

FENCE LINE

PROPERTY LINE

A	PRELIMINARY		3-2-2018
NO.	Revision Description	Project ID	Date

Notes:

Figure C-3. Plot Plan - Detailed

KINDER MORGAN

EL PASO NATURAL GAS

PROJECT

EPNG SOUTH MAINLINE EXPANSION PROJECT

ENLARGED PLOT PLAN
PROPOSED DRAGOON
COMPRESSOR STATION SITE

:Reference Drawings

DRAGOON COMPRESSOR STATION :Facility Name

Status: PRELIMINARY

State: ARIZONA | PIN No:

County: COCHISE | Scale: 1/32" = 1'-0"

Category: SITE PLAN

File Name: DRAGOON-A.DWG

Drawing No: DRAGOON-A | Rev A

Mar 02, 2018 - dsimp Verification

ATTACHMENT D – EQUIPMENT LIST

Type of Equipment [1]	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Proposed Dragoon Compressor Station						
Combustion Turbine	13,000-hp [2]	Solar Turbines	Mars 90-13000S	TBD	2018	A-01
Emergency Generator	750-kW	TBD	TBD	TBD	2018	A-Aux-1
Fugitives	N/A	N/A	N/A	N/A	2018	Fug-2
Existing Willcox Compressor Station (no changes proposed)						
Combustion Turbine	10,110-hp [3]	GE	M3142R-J	226335	1977	C-1
Combustion Turbine	10,110-hp [3]	GE	M3142R-J	226001	1972	C-2
Emergency Generator	1,085-hp	Caterpillar	3516SID	3RC00240	1991	C-Aux-1
Fugitives	N/A	N/A	N/A	N/A	1972	Fug
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

1 - Insignificant equipment not subject to a federal standard has not been included on this table.
2 - 13,000-hp maximum rated capacity assumes ISO conditions (59°F, 60% relative humidity, sea level, with no losses). Maximum rated capacity at site location is estimated to be approximately 12,604-hp.
3 - Based on site horsepower rating and 80°F ambient temperature.

ATTACHMENT E – EMISSION SOURCE FORM

Regulated Air Pollutant Data`					Emission Point Discharge Parameters								
Emission Point		Regulated Air Pollutant Name	Air Pollutant Emission Rate		UTM Coordinates of Emission Point			All Sources	Stack Sources			Nonpoint Sources	
Number	Name		lb/hr	tons/yr	Zone	Easting (m)	Northing (m)	Height (ft)	Diameter (ft)	Velocity (fps)	Temp (°F)	Length (ft)	Width (ft)
A-01	Combustion Turbine Emissions from Normal Operations	NO_X	5.76	25.24	12	TBD	TBD	60	7.5	200	826	-	-
		CO	5.86	25.66									
		SO_2	0.33	1.43									
		PM_{10}	0.63	2.78									
		$PM_{2.5}$	0.63	2.78									
		VOC	0.10	0.46									
MSS-TURBINE	Combustion Turbine Startup and Shutdown Emissions	NO_X	6.00	0.10	12	TBD	TBD	60	7.5	200	826	-	-
		CO	372.00	6.20									
		SO_2	0.33	0.03									
		PM_{10}	0.63	0.06									
		$PM_{2.5}$	0.63	0.06									
		VOC	27.00	0.45									
A-AUX-1	Emergency Generator Engine Emissions	NO_X	4.88	1.22	12	TBD	TBD	10	1	148.82	912	-	-
		CO	9.75	2.44									
		SO_2	<0.01	<0.01									
		PM_{10}	<0.01	<0.01									
		$PM_{2.5}$	<0.01	<0.01									
		VOC	2.44	0.61									
FUG-2	Fugitive Emissions	VOC	0.12	0.54	12	TBD	TBD	6	-	-	-	400	400
MSS-BLWDWN	Unit Blowdown Emissions	VOC	1.76	7.69	12	TBD	TBD	30	4	100	800	-	-
MSS-PIGGING	Pig Emissions	VOC	<0.01	0.02	12	TBD	TBD	6	-	-	-	5	5

ATTACHMENT F – EMISSION CALCULATIONS

Potential emissions for the proposed compressor station have been estimated using generally accepted calculation methodologies and engineering knowledge. Details about the calculation methodologies for specific sources are described in the sections below.

Natural Gas-Fired Combustion Turbine

The primary new emission source at the proposed compressor station will be a 13,000-hp Solar Mars 90-13000S combustion turbine, which may operate for up to 8,760 hours per year, in order to accommodate continuous operation and will be fueled only by natural gas.

The combustion turbine will be equipped with Solar's SoLoNOx lean-mix dry low NO_x combustion system, which will limit NO_x emissions to 15 parts per million by volume, dry (ppmvd), corrected to 15% oxygen (O_2) and limit carbon monoxide (CO) emissions to 25 ppmvd, corrected to 15% O_2. The turbine will be operated at 50% or greater load (i.e., in lean pre-mixed combustion mode) at all times except for startup, shutdown and during unavoidable malfunctions. During normal operation, there may be brief transitional periods when the load falls briefly below 50%. These periods will not exceed 30 minutes in duration.

Emissions of NO_x and CO were calculated using emission factors provided by Solar Turbines. Emissions of volatile organic compounds (VOCs) were calculated by multiplying the VOC weight percent of the fuel gas by an emission factor provided by Solar Turbines for unburned hydrocarbons (UHC).

Emissions of particulate matter with an aerodynamic diameter less than or equal to ten microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), sulfur dioxide (SO_2), and hazardous air pollutants (HAPs) were calculated using emission factors obtained from AP-42 Chapter 3 Section 1 for uncontrolled natural gas-fired turbines.

Emissions of methane (CH_4), nitrous oxide (N_2O), and carbon dioxide (CO_2) were calculated using emissions factors obtained from Tables C-1 and C-2 of 40 CFR 98 Subpart C for natural gas. These greenhouse gas emissions were then consolidated by converting to equivalent carbon dioxide (CO_2e) using global warming potentials obtained from Table A-1 of 40 CFR 98 Subpart C.

Turbine Startup and Shutdown

During periods of startup and shutdown, emissions in excess of the typical emissions of NO_x, CO, VOCs, and CO_2 are emitted from the combustion turbine. These additional emissions have been calculated based on the lb/event totals provided by Solar Turbines.

Total startup and shutdown emissions were calculated on an annual basis for 100 normal startup and 100 normal shutdown events per 12-month rolling period. Maximum hourly emissions were calculated for three normal startup events and three normal shutdown events occurring in one hour, which is logistically unlikely and highly improbable. All estimated maximum startup and shutdown counts are based on the operation of similar sites, and established EPNG operating procedures.

A normal startup event occurs when the unit is initiated, the fuel successfully ignites, and the unit is eventually engaged to do work. A failed fuel ignition is not counted as a startup event, as no additional startup emissions occur.

A normal shutdown event occurs when a unit stop is initiated and the unit transitions into a timed normal stop. Emergency stops are not counted, as fuel immediately ceases at the same time as the emergency stop is initiated. Thus, there would be no additional shutdown emissions.

Unit Blowdowns

The release of pressure and venting of natural gas (blowdown) in the event of a malfunction or as part of a planned or unplanned maintenance activity is necessary for the safe and reliable operation of a natural gas compression facility. The need for any such venting will be infrequent and episodic in nature. Aside from an annual total station emergency shutdown (ESD) required by Pipeline and Hazardous Materials Safety Administration (PHMSA) regulations, there will be no other routine or scheduled intermittent process venting.

Emissions were calculated for 20 total station ESDs and 80 unit blowdowns per 12-month rolling period. The estimated number of events are based on the operation of similar sites, and established EPNG operating procedures. Emissions resulting from these events will be released through a dedicated blowdown stack located on the same site, but for safety reasons, positioned away from all process equipment.

A total station ESD is when the entire station's compressor unit and yard piping is evacuated due to an emergency. Blowdown volume per ESD event was assumed to be 664 thousand cubic feet (MCF), and was estimated based on engineering process knowledge and the operation of similar sites.

A unit blowdown is when the unit's compressor (but not the yard piping) is evacuated. Blowdown volume per unit evacuation was assumed to be 43 MCF, and was estimated based on engineering process knowledge and the operation of similar sites.

Pig Launching and Receiving

Pig launching and receiving activities already occur at or adjacent to the existing Willcox Compressor Station. The addition of any "pigging" events associated with the addition of the Dragoon Compressor Station is conservative.

VOC emissions from "pigging" events, such as pig launching and receiving, have also been quantified in the emission calculations. During these events, the pig is put in a launcher once a section of piping is blocked off, and the pig is sent to a receiver with the piping section reopened. The instrument is removed at the receiving station once the pipe is again blocked off. Emissions were calculated for two (2) pig launching events and two (2) pig receiving events per 12-month rolling period. The volume of gas to be purged in each event was assumed to be 9.26 MCF, and was estimated based on engineering process knowledge and the operation of similar sites.

Insignificant Activities

The following table includes a list of activities understood by EPNG to be insignificant at the proposed compressor station, pursuant to A.A.C. R18-2-101.68. Even though there is not a requirement for the calculation of the emissions from insignificant activities, the calculations were still performed for some such activities due to those sources being subject to federal emissions and operations standards.

Table F-1. Summary of Insignificant Activities

Equipment/Activity	Citation	Comment
Piping of natural gas	A.A.C. R18-2-101.68.a.iii	The piping of natural gas is considered to be insignificant.
Emergency generator	A.A.C. R18-2-101.68.b	Engines which operate only in emergency or stand-by service for less than 500 hours per year are considered to be insignificant.
Used oil storage tank	A.A.C. R18-2-101.68.a.i	Storage vessels for used oil are considered to be insignificant, provided the volume or annual throughput is known.
Lube oil storage tank	A.A.C. R18-2-101.68.a.i	Storage vessels for lubricating oil are considered to be insignificant, provided the volume or annual throughput is known.
Used oil handling equipment	A.A.C. R18-2-101.68.a.i	Equipment and piping used only in the service of used oil is considered insignificant.

Piping of Natural Gas

Per A.A.C. R18-2-101.68.a.iii, the storage and piping of natural gas is considered to be an insignificant source. However, the collection of fugitive emission components at a compressor station are subject to New Source Performance Standard (NSPS), Subpart OOOOa. Therefore, fugitive emissions from the piping components were quantified.

Fugitive emissions from the piping components for the proposed Dragoon Compressor Station were calculated using emission factors for gas service obtained from Table 2-4 of EPA's *Protocol for Equipment Leak Emission Estimates* guidance document (EPA-453/R-95-017, November 1995). Component counts were based on values from GRI-HAPCalc 3.01 for a default compressor station. In total, emissions were calculated from 257 valves, 737 connectors, 120 flanges, 14 open-ended lines, and 30 "other" components. A 10% safety factor was added to conservatively account for additional fittings and equipment which may be present at the proposed compressor station. The fugitive emissions were represented as uncontrolled, and annual emissions were calculated based on continuous operations of 8,760 hours/year.

Emergency Generator Engine

A new 750-kilowatt (kW) emergency generator will operate when electrical power from the grid is unavailable or unreliable. The emergency generator will be a spark ignition (SI) reciprocating internal combustion engine (RICE), fired exclusively on natural gas and will be limited to 500 hours per year of operation (including up to 100 hours per year of non-emergency operation). The duty of this engine, as well as the operational schedule mean that this emission source is considered to be insignificant per A.A.C. R18-2-101.68.b, provided that EPNG keep records documenting the hours of operation.

Although the emergency generator was determined to be an insignificant source, emissions were still calculated for its operation since it is subject to NSPS Subpart JJJJ and National Emission Standards for Hazardous Air Pollutants (NESHAPs) Subpart ZZZZ.

Emissions of NO_x, CO, and VOCs were calculated using emission standards obtained from NSPS Subpart JJJJ for natural gas-fired emergency engines ≥ 130-hp and manufactured after 01/01/2009. The use of emission standards for the calculation of emissions from a RICE is considered to be extremely conservative. Emissions of PM, PM_{10}, $PM_{2.5}$, SO_2, and HAPs were calculated using emission factors obtained from AP-42 Chapter 3 Section 2 for 4-stroke lean-burn engines. Greenhouse gas emissions of CH_4, N_2O, CO_2, and CO_2e were calculated using emission factors obtained from 40 CFR 98 Subpart C.

Used Oil Tank and Handling Equipment

The used oil tank will be supplied by a scrubber, which removes lube oils entrained in the incoming natural gas by the upstream compressor. The entrained lube oils considered to be "used oil" are moved from the scrubber to a sump, by gravity, and a pump then sends the used oil from the sump to the used oil tank. The used oil tank will also receive any locally generated, used lube oil from the combustion turbine and/or emergency generator. Per A.A.C. R18-2-101.68.a.i, equipment handling used oil is considered to be insignificant.

Per A.A.C. R18-2-101.68.a.i, petroleum product storage tanks containing used oil are considered to be insignificant sources, provided that EPNG lists and identifies the contents of each tank with a volume of 350 gallons or more and provides threshold values for throughput or capacity for each such tank. The proposed used oil tank will have a capacity of 3,600 gallons.

Since none of the equipment associated with the used oil collection or storage is subject to any NSPS or NESHAP, no emission calculations were performed for these activities.

Emission Summary

Table F-2 summarizes the PTE for each regulated NSR pollutant from the proposed equipment at the Dragoon Compressor Station. The calculated emissions demonstrate the project PTE increase will not exceed any of the significant emissions thresholds, but that the permitting exemption threshold for NOx will be exceeded.

Table F-2. Summary of Emissions

Emission Point	Emission Source	NOx	CO	SO_2	$PM/PM_{10}/PM_{2.5}$	VOC	CO_2e
		(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
A-01	Combustion Turbine Emissions from Normal Operations	25.24	25.66	1.43	2.78	0.46	49,252.74
MSS-TURBINE	Combustion Turbine Startup and Shutdown Emissions	0.10	6.20	0.03	0.06	0.45	101.80
A-Aux-1	Emergency Generator Engine Emissions	1.22	2.44	<0.01	<0.01	0.61	137.29
Fug-2	Fugitive Emissions	-	-	-	-	0.54	375.71
MSS-BLWDWN	Unit Blowdown Emissions	-	-	-	-	7.69	5,319.55
MSS-PIGGING	Pig Launching and Receiving Emissions	-	-	-	-	0.02	11.78
	Facility PTE	**26.56**	**34.30**	**1.46**	**2.84**	**9.77**	**55,198.87**
	Significant Emissions Threshold	**40**	**100**	**40**	**25/15/10**	**40**	**-**
Project PTE Increase Below Significant Emissions Threshold?		**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**-**
	Permitting Exemption Threshold	**20**	**50**	**20**	**-/7.5/5**	**20**	**-**
Project PTE Increase Below Permitting Exemption Threshold?		**No**	**Yes**	**Yes**	**Yes**	**Yes**	**-**

ATTACHMENT G – MINOR NSR APPLICABILITY DETERMINATION

For a modification at an existing Class I source, the Minor NSR Program is applicable to each regulated minor NSR pollutant with the PTE increase greater than or equal to the permitting exemption threshold. As demonstrated in Attachment F, the project emission increases for NO_x exceed the NO_x permitting exemption threshold. Therefore, the facility is subject to the Minor NSR Program for NO_x.

A facility subject to the requirements of the Minor NSR Program must comply with one of the following requirements:

- Implement Reasonably Available Control Technology (RACT) for each emissions unit with a PTE greater than or equal to 20% of the permitting exemption threshold; or
- Perform an ambient air quality assessment to demonstrate that the emissions will not interfere with the attainment of any National Ambient Air Quality Standard (NAAQS).

EPNG has elected to demonstrate that the proposed equipment, namely the combustion turbine, will constitute RACT for NO_x, and will thus be in compliance with the requirement of the Minor NSR Program.

Per the ADEQ's *Minor NSR Guidance Document*, an applicant may use an emissions standard established or revised by the Administrator for the same type of source under section 111 or 112 of the Act after November 15, 1990 (NSPS/NESHAP) for RACT.

The combustion turbine will be equipped with Solar's SoLoNOx lean-mix dry low NO_x combustion system. This system will limit NO_x emissions to 15 ppmvd at 15% O_2. NSPS Subpart KKKK requires that any new natural gas-fired combustion turbine with a heat input at peak load between 50 MMBTU/hr and 850 MMBTU/hr meet a NO_x emission standard of 25 ppmvd at 15% O_2. Since the manufacturer guarantee for the combustion turbine establishes a more stringent emission rate than is required under NSPS Subpart KKKK, EPNG asserts that the proposed Mars 90-13000S combustion turbine, equipped with Solar's SoLoNOx system constitutes RACT, with regard to NO_x.

ATTACHMENT H – REGULATORY ANALYSIS

This Attachment describes the applicability of state and federal air quality regulations to the construction and operation of the proposed compressor station. A brief discussion of the requirements of applicable state and federal requirements is included below.

State Regulations

Arizona Department of Environmental Quality – Air Pollution Control Regulations

The ADEQ Air Pollution Control regulations are codified at Title 18, Chapter 2 of the A.A.C. Table H-1, below, identifies whether a specific regulation under Title 18 of the A.A.C. applies to the proposed compressor station and provides an explanation of how the facility will demonstration compliance with the regulation.

Table H-1. ADEQ Air Pollution Control Regulations and Applicability Determination

Regulation	Citation	Applicability	Compliance Explanation
Article 3 – Permits and Permit Revisions			
R18-2-302	A Class I permit is required for a person to begin actual construction of or operate any stationary source that emits, or has the maximum capacity to emit with any elective limits, any regulated NSR pollutant in an amount greater than or equal to the significant level.	Yes	This facility is an existing major source, and the project will be a Significant Revision to the Class I permit.
R18-2-304	Applicants shall complete the applicable standard application form provided by the Director and supply all information required by the form's filing instructions. The applicant shall submit a complete application.	Yes	EPNG has complied with all permit requirements and has provided the necessary information to revise the existing Class I permit.
R18-2-305	A notice of confidentiality shall precisely identify the information in the documents submitted which is considered confidential.	No	EPNG has not requested that any information contained within this document be deemed confidential.
R18-2-306	The permit shall incorporate all applicable enforceable emission limitations/standards, monitoring/testing requirements, recordkeeping requirements, and reporting requirements.	Yes	This facility will comply with all emission limitations and standards, as described in this permit application. The facility will also comply with all testing and monitoring requirements and will keep records of any such activities. Reports of any required monitoring will be submitted at least once per year. All records, analyses and reports shall be retained for a minimum of five years from the date of generation. All required fees will be provided to ADEQ.
R18-2-307	The applicant shall provide a complete copy of the application including any attachments, compliance plans, and other information required by R18-2-304(F) at the time of submittal of the application to the Director.	Yes	Since the Willcox Compressor Station is an existing major source, a copy of the permit revision application will be submitted to EPA.

Regulation	Citation	Applicability	Compliance Explanation
R18-2-309	All permits shall require a submission of compliance certification, which shall not be less than annually.	Yes	EPNG will submit an annual compliance certification to the Director which describes the compliance status of the source with respect to each permit condition.
R18-2-310.01	The owner or operator of any source shall report to the Director any emissions in excess of the limits established by this Chapter or the applicable permit.	Yes	EPNG will report to the Director any emissions in excess of the limits established by this Chapter or the applicable permit.
R18-2-312	Within 60 days after a source subject to the permit requirements of this Article has achieved the capability to operate at its maximum production rate on a sustained basis but no later than 180 days after initial start-up of such source and at such other times as may be required by the Director, the owner or operator of such source shall conduct performance tests and furnish the Director a written report of the results of the tests.	Yes	EPNG will conduct performance testing as required by the Director.
R18-2-326	The owner or operator of a source required to have an air quality permit from the Director shall pay the fees described in this Section.	Yes	EPNG will pay the applicable fees for the appropriate source category for the facility.
R18-2-327	Every source subject to permit requirements under this Chapter shall complete and submit to the Director an annual emissions inventory questionnaire.	Yes	EPNG will complete and submit to the Director an annual emissions inventory questionnaire by March 31 or 90 days after the Director makes the inventory form available, whichever occurs later, and shall include emission information for the previous calendar year.
R18-2-334	In the case of a minor NSR modification, the owner or operator shall implement RACT for each emissions unit that will experience an increase in the potential to emit a regulated minor NSR pollutant equal to or greater than 20% of the permitting exemption threshold.	Yes	EPNG has followed the procedures set forth to perform a RACT determination for any applicable sources.
Article 4 - Permit Requirements for New Major Sources and Major Modifications to Existing Major Sources			
R18-2-402	The requirements of R18-2-403 through R18-2-410 apply to the construction of any new major source or any major modification of any existing major source, except as this Article otherwise provides.	No	While the facility is an existing major source, the project will not be a major modification.
Article 5 – General Permits			
R18-2-503	Once the Director has issued a general permit, any source which is a member of the class of facilities covered by the general permit may apply to the Director for authority to operate under the general permit.	No	EPNG is not seeking a general permit for the facility.

Regulation	Citation	Applicability	Compliance Explanation
Article 6 – Emissions from Existing and New Nonpoint Sources			
R18-2-614	Opacity of an emission from any nonpoint source shall not be greater than 40% measured according to the 40 CFR 60, Appendix A, Reference Method 9.	Yes	EPNG will minimize fugitive dust emissions at the facility.
Article 7 – Existing Stationary Source Performance Standards			
R-18-2-702	The opacity of any plume or effluent shall not be greater than 20% in an area that is attainment or unclassifiable for each particulate matter standard.	Yes	EPNG will utilize only natural gas fuel which will ensure that opacity will not exceed 20%.
Article 8 – Emissions from Mobile Sources			
R18-2-801	Unless otherwise specified, no mobile source shall emit smoke or dust the opacity of which exceeds 40%.	Yes	Mobile sources at the facility will not emit smoke or dust the opacity of which exceeds 40%.
Article 9 – New Source Performance Standards			
R18-2-901	The following subparts of 40 CFR 60, New Source Performance Standards (NSPS), and all accompanying appendices, adopted as of June 28, 2013, and no future editions or amendments, are incorporated by reference as applicable requirements.	Yes	The provisions of this regulation incorporate by reference specified 40 CFR 60 NSPS regulations. A determination of applicability for potentially applicable NSPS subparts is provided later in this Class I permit revision application.
Article 11 – Federal Hazardous Air Pollutants			
R18-2-1101	The following subparts of 40 CFR 61, National Emission Standards for Hazardous Air Pollutants (NESHAPs), and 40 CFR 63, NESHAPs for Source Categories, and all accompanying appendices, adopted as of June 28, 2013, and no future editions or amendments, are incorporated by reference as applicable requirements.	Yes	The provisions of this regulation incorporate by reference specified 40 CFR 63 NESHAP regulations. A determination of applicability for potentially applicable NESHAP subparts is provided later in this Class I permit revision application.
Article 12 – Emissions Bank			
R18-2-1204	A source wanting to generate an emission reduction for deposit into the bank shall submit a Credit Generation Application (CGA) to the Director on a form prescribed by the Director.	No	EPNG is not claiming credit for emission reductions at the facility.
Article 13 – State Implementation Plan Rules for Specific Locations			
R18-2-13 Parts B and C	This Section applies to the owner or operator of select listed facilities.	No	EPNG does not own or operate any of the listed facilities.
Article 16 – Visibility; Regional Haze			
R18-2-1602	Visibility; Regional Haze	No	The facility does not cause or contribute to visibility impairment in any mandatory Federal Class I area.

Federal Regulations

Prevention of Significant Deterioration (PSD)

As defined by Title 40 Code of Federal Regulations (CFR) Part 52.21(b)(1)(i), a facility is considered major under prevention of significant deterioration (PSD) if it has the potential to emit 250 tpy of any regulated NSR pollutant, or 100 tpy for specified source categories. Since the facility is not in a specified source category, the PSD threshold for the facility is 250 tpy.

The existing facility has a PTE greater than the major source threshold for NO_x; however, the project is not a major modification since the PTE increase for each pollutant is below the significant emission threshold.

Nonattainment New Source Review (NNSR)

The federal pre-construction review for a new or modified major source located in a nonattainment area is commonly referred to as Nonattainment New Source Review (NNSR). NNSR only applies to major sources of the pollutants that are located in areas classified as nonattainment.

A small section of Cochise County near Paul Spur/Douglas is currently classified as a moderate nonattainment area with respect to the 1987 PM_{10} NAAQS. Cochise County is classified as being in attainment or unclassified with respect to all other NAAQS.

The facility is not located in the portion of Cochise County that is classified as nonattainment for PM_{10}. Therefore, it is not subject to nonattainment new source review.

New Source Performance Standards

Section 111 of the Clean Air Act authorized the EPA to develop technology-based standards that apply to specific categories of stationary sources. These standards are referred to as New Source Performance Standards (NSPS) and are found in 40 CFR Part 60. NSPS applies to new, modified, and reconstructed affected facilities in specific source categories.

Table H-2 lists the NSPS subparts under 40 CFR Part 60 that are potentially applicable to emission units at the proposed Dragoon Compressor Station and notes whether each subpart is or is not applicable.

Table H-2. New Source Performance Standards Applicability Determination

Subpart	Rule Description	Applicability	Discussion of Applicability
A	General Provisions	Yes	This subpart contains general requirements for notification, testing, and reporting for the NSPS program and is applicable to each facility that is an affected source as defined under another subpart. Since the project will have units subject to one or more standards under 40 CFR 60, Subpart A applies to the facility.
D	Standards of Performance for Fossil-Fuel-Fired Steam Generators	No	There are no fossil-fuel-fired steam generators at this facility.
Da	Standards of Performance for Electric Utility Steam Generating Units	No	There are no electric utility steam generating units at this facility.
Db	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units	No	There are no industrial-commercial-institutional steam generating units at this facility.
Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	There are no small industrial-commercial-institutional steam generating units at this facility.

Subpart	Rule Description	Applicability	Discussion of Applicability
K	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978	No	There are no petroleum liquids tanks at this facility that were constructed prior to 5/19/1978.
Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984	No	There are no petroleum liquids tanks at this facility that were constructed prior to 7/23/1984.
Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	No	The storage tanks at the facility each have a capacity less than the minimum applicability threshold capacity of 75 cubic meters (19,813 gallons). Therefore, Subpart Kb is not applicable.
GG	Standards of Performance for Stationary Combustion Turbines	No	The proposed stationary combustion turbine is subject to Subpart KKKK, which exempts it from the requirements of Subpart GG. Note: The two existing stationary combustion turbines located at the adjacent, existing Willcox Compressor Station are not subject to Subpart GG because they were manufactured prior to October 3, 1977.
KKK	Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants	No	The facility is not a natural gas processing plant as defined under this subpart.
LLL	Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions	No	The facility is not a natural gas processing plant as defined under this subpart.
IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	No	There are no compression ignition internal combustion engines at this facility.
JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	The proposed emergency generator is subject to Subpart JJJJ, as it is a new stationary spark ignition (SI) internal combustion engine (ICE). The generator will meet the emission limits set forth in this subpart for stationary emergency SI ICE ≥ 130-horsepower (hp), manufactured on or after January 1, 2009. Note: The existing emergency generator located at the adjacent, existing Willcox Compressor Station is not subject to Subpart JJJJ because it was manufactured prior to June 12, 2006.
KKKK	Standards of Performance for Stationary Combustion Turbines	Yes	The proposed stationary combustion turbine is subject to Subpart KKKK, as it has a heat input at peak load ≥10 MMBtu/hr (based on the higher heating value of the fuel) and will commence construction after February 18, 2005. Note: The two existing stationary combustion turbines are not subject to Subpart KKKK because they were manufactured prior to February 18, 2005.
OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction, Modification or Reconstruction Commenced After August 23, 2011, and on or before September 18, 2015	No	Construction of the new equipment is anticipated to commence in 2019. Furthermore, existing equipment at the facility was constructed before August 23, 2011. Therefore, this subpart does not apply.
OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced After September 18, 2015	Yes	Subpart OOOOa is applicable to the collection of fugitive emission components to be constructed at the Dragoon Compressor Station.

Subpart	Rule Description	Applicability	Discussion of Applicability
TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Utility Generating Units	No	The facility does not contain any affected facilities under this subpart.
UUUU	Emission Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	The facility does not contain any affected facilities under this subpart.

Table H-3 lists the obligations for the new emission units at the proposed Dragoon Compressor Station, driven by the NSPS, including all monitoring, recordkeeping, and reporting requirements. All records should be kept at the facility in a reviewable format. However, since the facility will normally operate unattended, records will be maintained at an office within Arizona having day-to-day operational control of the facility. Unless otherwise specified, all records must be kept for at least five years.

Please note that the proposed Dragoon Compressor Station will be subject to NSPS Subpart OOOOa for natural gas facilities. The existing Willcox Compressor Station operates independently on a separate line and is not subject to Subpart OOOOa. This subpart requires the development and implementation of a fugitive leak detection, monitoring and repair plan. This plan will be developed and adhered to, however, the requirements of this Subpart are too expansive to detail in the table below. An initial survey of fugitive components will be conducted within 60 days or startup using either optical gas imaging (OGI) to detect any visible emissions or Method 21 to detect any leak reading > 500 ppm. Quarterly surveys will be performed thereafter. Leaks will be repaired as soon as practicable, but no later than 30 days after detection unless Delay of Repair Requirements are met. Components that are repaired will be resurveyed as soon as practicable, but no later than 30 days after being repaired. Records will be kept on the dates of such surveys.

Table H-3. 40 CFR Part 60 Requirements

Regulation	Requirement	Method of Compliance
40 CFR §60.4320(a) §60.4325	You must meet the emission limits for NO_x specified in Table 1 to this subpart.	EPNG will operate the new combustion turbine with the following emission limit: NO_x: 25 ppm at 15% O_2
40 CFR §60.4330(a)(2)	You must not burn in the subject stationary combustion turbine any fuel which contains total potential sulfur emissions in excess of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input.	EPNG will not burn fuels in the new combustion turbine which contain total potential sulfur emissions in excess of 0.060 lb SO_2/MMBtu.
40 CFR §60.4333(a)	You must operate and maintain your stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.	EPNG will operate and maintain the new combustion turbine with good air pollution control practices for minimizing emissions at all times.
40 CFR §60.4340(a)	If you are not using water or steam injection to control NO_x emissions, you must perform annual performance tests in accordance with §60.4400 to demonstrate continuous compliance. If the NO_x emission result from the performance test is less than or equal to 75 percent of the NO_x emission limit for the turbine, you may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NO_x emission limit for the turbine, you must resume annual performance tests.	EPNG will conduct annual performance tests for the new combustion turbine following the applicable procedures. If NO_x emission result from the test is less than 75% of the NO_x limit for the turbine, subsequent performance tests will be conducted only once every 2 years.

Regulation	Requirement	Method of Compliance
40 CFR §60.4365, (a)	You may elect not to monitor the total sulfur content of the fuel combusted in the turbine, if the fuel is demonstrated not to exceed potential sulfur emissions of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input for units located in continental areas. You must use one of the following sources of information to make the required demonstration: The fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for oil use is 0.05 weight percent (500 ppmw) or less, the total sulfur content for natural gas use is 20 grains of sulfur or less per 100 standard cubic feet, has potential sulfur emissions of less than less than 26 ng SO2/J (0.060 lb SO2/MMBtu) heat input.	EPNG will comply with the sulfur requirements of NSPS KKKK by maintaining transportation contracts to demonstrate that the sulfur content of the fuel combusted in the new turbine does not exceed the applicable limits.
40 CFR §60.4375(b)	For each affected unit that performs annual performance tests in accordance with §60.4340(a), you must submit a written report of the results of each performance test before the close of business on the 60th day following the completion of the performance test.	EPNG will submit a written report within 60 days of performing the annual performance test for the new combustion turbine.
40 CFR [T][G]§60.4400(a) [T]§60.4400(b) [T]§60.4400(b)(1) [T]§60.4400(b)(4) [T]§60.4400(b)(6)	You must conduct an initial performance test, as required in §60.8. Subsequent NO_x performance tests shall be conducted on an annual basis (no more than 14 calendar months following the previous performance test).	EPNG will conduct an initial NO_x performance test for the new combustion turbine following the applicable procedures.
40 CFR §60.4415(a) [T]§60.4415(a)(1) [T]§60.4415(a)(1)(ii)	You must conduct an initial performance test, as required in §60.8. Subsequent SO_2 performance tests shall be conducted on an annual basis (no more than 14 calendar months following the previous performance test). There are three methodologies that you may use to conduct the performance tests.	EPNG will comply with the sulfur requirements of NSPS KKKK by maintaining transportation contracts to demonstrate that the sulfur content of the fuel combusted in the new turbine does not exceed the applicable limits.
40 CFR §60.4234	Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine.	EPNG will operate and maintain the new emergency generator to achieve the emissions standards set forth in §60.4233 over the entire life of the engine.
40 CFR §60.4237(a)	Starting on July 1, 2010, if the emergency stationary SI internal combustion engine that is greater than or equal to 500 HP that was built on or after July 1, 2010, does not meet the standards applicable to non-emergency engines, the owner or operator must install a non-resettable hour meter.	EPNG will ensure a non-resettable hour meter is on the new emergency generator to monitor its hours of operation.
40 CFR §60.4243(a)(1)	If you operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, you must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required if you are an owner or operator. You must also meet the requirements as specified in 40 CFR part 1068, subparts A through D, as they apply to you. If you adjust engine settings according to and consistent with the manufacturer's instructions, your stationary SI internal combustion engine will not be considered out of compliance.	EPNG will comply with the maintenance requirements or with the requirements for non-certified units.
40 CFR §60.4243(b); §60.4243(b)(1)	If you are an owner or operator of a stationary SI internal combustion engine and must comply with the emission standards specified in §60.4233(d) or (e), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) and (2) of this section. Purchasing an engine certified according to procedures specified in this subpart, for the same model year and demonstrating compliance according to one of the methods specified in paragraph (a) of this section.	EPNG will purchase an engine that is certified according to the procedures specified in this subpart or will comply with the requirements for non-certified units. .

Regulation	Requirement	Method of Compliance
40 CFR [G]§60.4243(d)	If you own or operate an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (d)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (d)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (d)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.	EPNG will not operate the new emergency generator for more than 100 hours per calendar year for maintenance checks/readiness testing. EPNG will not operate the new emergency generator for more than 50 hours per calendar year in non-emergency situations. These 50 hours count as part of the 100 hours per calendar year allowed for maintenance/testing.
40 CFR §60.4233(e)	Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified.	EPNG will operate the new emergency generator with the following NO_x, CO, and VOC emission limits: NO_x: 2.0 g/HP-hr CO: 4.0 g/HP-hr VOC: 1.0 g/HP-hr
40 CFR §60.4245(a)(1)	Owners and operators of all stationary SI ICE must keep records of all notifications submitted to comply with this subpart and all documentation supporting any notification.	EPNG will keep records on all notifications submitted to comply with NSPS JJJJ, including any supporting documentation.
40 CFR §60.4245(a)(2)	Owners and operators of all stationary SI ICE must keep records of maintenance conducted on the engine.	EPNG will keep records on all maintenance conducted on the new emergency generator.
40 CFR §60.4245(a)(3)	Owners and operators of certified stationary SI ICE must keep records of documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable.	EPNG will keep documentation from the manufacturer certifying that the new emergency generator will meet the applicable emission standards or will comply with the requirements for non-certified units.
40 CFR §60.4245(b)	For all stationary SI emergency ICE greater than or equal to 500 HP manufactured on or after July 1, 2010, that do not meet the standards applicable to non-emergency engines, the owner or operator of must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.	EPNG will keep records of the hours of operation of the new emergency generator, as recorded through the non-resettable hour meter. EPNG will document how many hours are spent for emergency operation, what classified the operation as emergency, and how many hours are spent for non-emergency operation.

National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulate HAP emissions and are codified in 40 CFR Parts 61 and 63.

Part 61 was promulgated prior to the 1990 Clean Air Act Amendments (CAAA) and regulates only eight types of hazardous substances (asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride). The project is not in one of the source categories regulated by Part 61; therefore, the requirements of Part 61 are not applicable. In the case of a future project resulting in asbestos renovation or any demolition, Subpart M would apply.

The 1990 CAAA established a list of 189 HAPs, resulting in the promulgation of Part 63, also known as the Maximum Achievable Control Technology (MACT) standards. Part 63 regulates HAP emissions from both major sources of HAP emissions and non-major (area) sources of HAP emissions within specific source categories. A major source of HAP is defined in Part 63 as a "stationary source or group of stationary sources located within a contiguous area and under common control" that has the potential to emit 10 tpy of any single HAP or 25 tpy of HAPs in aggregate. Since combined HAP emissions at the proposed Dragoon Compressor Station and at the existing Willcox Compressor Station will not exceed these thresholds, the facility will continue to be considered an area source of HAPs.

Table H-4 lists the NESHAP subparts under 40 CFR 63 that are potentially applicable to emission units at the proposed compressor station and notes whether each subpart is or is not applicable.

Table H-4. National Emission Standards for Hazardous Air Pollutants Applicability Determination

Subpart	Rule Description	Applicability	Discussion of Applicability
A	General Provisions	Yes	This subpart contains general requirements for notification, testing, and reporting for the NESHAPs program. Subpart A applies to each facility that is an affected source as defined under another subpart. Since the project will have units subject to one or more standards under 40 CFR 63, Subpart A applies to the facility.
HH	National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities	No	The facility is not a major source of HAPs and there are no triethylene glycol dehydration units at this facility.
HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No	The facility is not a major source of HAPs, nor does it contain an affected unit.
YYYY	National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines	No	The facility is not a major source of HAPs.
ZZZZ	National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines	Yes	Both the new and existing emergency generators are reciprocating internal combustion engines (RICE) with engine ratings large enough to be subject to Subpart ZZZZ.
DDDDD	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters	No	There are no industrial, commercial, or institutional boilers or process heaters at this facility.
UUUUU	National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units	No	There are no coal or oil-fired electric utility steam generating units at this facility.

Table H-5 lists the obligations for the new emission units at the proposed compressor station, driven by the NESHAPs (MACTs), including all monitoring, recordkeeping, and reporting requirements. All records should be kept at the facility in a reviewable format. However, since the facility will normally operate unattended, records will be maintained at an office within Arizona having day-to-day operational control of the facility. Unless otherwise specified, all records must be kept for at least five years.

Table H-5. 40 CFR Part 63 Requirements

Regulation	Requirement	Method of Compliance
40 CFR §63.6590(c)	Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.	EPNG will comply with 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart JJJJ. No further requirements apply for such engines under this subpart.

Acid Rain Program

New utility units are subject to the federal Acid Rain Program under 40 CFR 72. A new utility unit, as defined under 40 CFR Part 72.6, is a fossil fuel-fired combustion device that commences operation after November 15, 1990 and that serves a generator producing electricity for sale. The facility will not sell electricity to the grid; therefore, the Dragoon Compressor Station will not be subject to the federal Acid Rain Program under 40 CFR 72.

ATTACHMENT I – APPLICATION ADMINISTRATIVE COMPLETENESS CHECKLIST

SECTION 4.0 - APPLICATION ADMINISTRATIVE COMPLETENESS CHECKLIST

	REQUIREMENT	MEETS REQUIREMENTS			COMMENT
		YES	NO	N/A	
1	Has the standard application form been completed?	X			
2	Has the responsible official signed the standard application form?	X			
3	Has a process description been provided?	X			
4	Are the facility's emissions documented with all appropriate supporting information?	X			
5	Is the facility subject to Minor NSR requirements? If the answer is "YES", answer 6a, 6b and 6c as applicable. If the answer is "NO", skip to 7.	X			
6.a	If the facility chooses to implement RACT, is the RACT determination included for the affected pollutants for all affected emission units?	X			
6.b	If the facility chooses to demonstrate compliance with NAAQS by screen modeling, is the modeling analysis included?			X	
6.c	If refined modeling has been conducted, is a comprehensive modeling report along with all modeling files included?			X	
7	Does the application include an equipment list with the type, name, make, model, serial number, maximum rated capacity, and date of manufacture?	X			Serial numbers TBD
8	Does the application include an identification and description of Pollution Controls? (if applicable)	X			
9	For any application component claimed as confidential, are the requirements of AR.S. 49-432 and A.A.C. R18-2-305 addressed?			X	
10	For any current non-compliance issue, is a compliance schedule attached?			X	
11	For minor permit revision that will make a modification upon submittal of application, has a suggested draft permit been attached?			X	
12	For major sources, have all applicable requirements been identified?	X			
13	For major sources, has a CAM applicability analysis been provided? For CAM applicable units, have CAM plans been provided?			X	
14	For major sources subject to requirements under Article 4 of the A.A.C., have all necessary New Source Review analyses identified in the application been presented?			X	

ATTACHMENT J – DETAILED EMISSION CALCULATIONS

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Summary of Facility Potential to Emit

Table J-1. Summary of Facility Potential-to-Emit

Emission Source	NO_x		CO		SO_2		PM/PM_{10}		$PM_{2.5}$		VOC	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Combustion Turbine Emissions from Normal Operations	5.76	25.24	5.86	25.66	0.33	1.43	0.63	2.78	0.63	2.78	0.10	0.46
Combustion Turbine Startup and Shutdown Emissions	6.00	0.10	372.00	6.20	0.33	0.03	0.63	0.06	0.63	0.06	27.00	0.45
Emergency Generator Engine Emissions	4.88	1.22	9.75	2.44	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.44	0.61
Fugitive Emissions	-	-	-	-	-	-	-	-	-	-	0.12	0.54
Unit Blowdown Emissions	-	-	-	-	-	-	-	-	-	-	1.76	7.69
Pig Launching and Receiving Emissions	-	-	-	-	-	-	-	-	-	-	<0.01	0.02
Total	**16.64**	**26.56**	**387.61**	**34.30**	**0.65**	**1.46**	**1.27**	**2.84**	**1.27**	**2.84**	**31.42**	**9.77**

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Fuel Gas Composition and Properties

Table J-2a. Fuel Gas Composition

Constituent	Fuel Gas Composition (% vol.) [1]	Fuel Gas Composition (% wt.)
Methane (CH_4)	92.79%	86.08%
Ethane (C_2H_6)	4.16%	7.24%
Propane (C_3H_8)	0.84%	2.14%
N-Butane (C_4H_{10})	0.18%	0.61%
N-Pentane (C_5H_{12})	0.04%	0.17%
Hexane (C_6H_{14})	0.04%	0.20%
Carbon Dioxide (CO_2)	0.44%	1.12%
Hydrogen Sulfide (H_2S)	0.0001%	0.0002%
Nitrogen (N_2)	1.51%	2.45%
TOTAL	100.00%	100.00%

[1] Volume percents obtained from fuel gas composition table in Solar Turbines' *Predicted Emission Performance* document dated 3/22/2017.

VOC (% vol.) [1]	1.10%
VOC (% wt.) [1]	3.11%
MW of Gas (lb/lb-mole)	17.29

[1] All non-methane and non-ethane organic compounds were considered to be VOC.

Table J-2b. Fuel Gas Properties

Parameter	Value [1]
Lower Heating Value (BTU/scf)	939.2
Specific Gravity	0.5970
Wobbe Index at 60°F	1215.6

[1] Values obtained from fuel gas properties table in Solar Turbines' *Predicted Emission Performance* document dated 3/22/2017.

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Combustion Turbine Emissions from Normal Operations

Table J-3.a. Combustion Turbine Specifications

Parameter	Value [1]
Elevation (ft)	4,467
Engine Inlet Temperature (°F)	0.0
Relative Humidity (%)	60.0
Annual hours of operation (hr)	8,760
Horsepower (hp) [2]	12,604
Fuel heat rating (Btu/hp-hr) [2]	7,619
Maximum heat input (MMBtu/hr)	96.03
Maximum annual fuel consumption (MMBtu/yr)	841,221.71

[1] Values are based on worst-case operating scenario for natural gas fuel at 100% load.

[2] Value obtained from Solar Turbines *Predicted Emission Performance* document dated 3/22/2017.

Table J-3.b. Combustion Turbine Emissions - Criteria Pollutants and Greenhouse Gases

Pollutant	Emission Factor	Hourly Emissions	Annual Emissions
	(lb/MMBtu)	(lb/hr)	(tpy)
NO_X [1]	0.0600	5.76	25.24
CO [1]	0.0610	5.86	25.66
VOC [2]	0.0011	0.10	0.46
PM (condensable) [3]	0.0047	0.45	1.98
PM (filterable) [3]	0.0019	0.18	0.80
PM (total) [3]	0.0066	0.63	2.78
SO_2 [3]	0.0034	0.33	1.43
CH_4 [4]	0.0022	0.212	0.93
N_2O [4]	0.0002	0.021	0.09
CO_2 [5]	116.98	11,233.32	49,201.92
CO_2e [6]	117.10	11,244.92	49,252.74

[1] Emission factor obtained from Solar Turbines *Predicted Emission Performance* document dated 3/22/2017.

[2] Emission factor was obtained by multiplying the UHC emission factor obtained from Solar Turbines *Predicted Emission Performance* document by the VOC weight %.

[3] Emission factor obtained from AP-42 Chapter 3 Section 1, Table 3.1-2a for uncontrolled natural gas-fired turbines.

[4] Emission factor obtained from 40 CFR 98 Subpart C, Table C-2 for natural gas.

[5] Emission factor obtained from 40 CFR 98 Subpart C, Table C-1 for natural gas.

[6] Global warming potentials obtained from Table A-1 to Subpart A of Part 98 - Global Warming Potentials Equation A-1:

$CO_2e = \sum GHGi \times GWPi$

Where:

CO_2e = Carbon dioxide equivalent (tons/year)

GHGi = Mass emissions of each GHG (tons/year)

GWPi = Global warming potential for each GHG (1 for CO_2; 25 for CH_4; 298 for N_2O)

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Combustion Turbine Emissions from Normal Operations

Table J-3.c. Combustion Turbine Emissions - Hazardous Air Pollutants

Pollutant	Emission Factor [1]	Emission Rate	Emission Rate	Emission Rate
	(lb/MMBtu)	(lb/hr)	(lb/yr)	(tpy)
1,3-Butadiene	4.30E-07	4.13E-05	0.362	1.81E-04
Acetaldehyde	4.00E-05	0.004	33.649	0.017
Acrolein	6.40E-06	6.15E-04	5.384	0.003
Benzene	1.20E-05	0.001	10.095	0.005
Ethylbenzene	3.20E-05	0.003	26.919	0.013
Formaldehyde	7.10E-04	0.068	597.267	0.299
Naphthalene	1.30E-06	1.25E-04	1.094	5.47E-04
PAH	2.20E-06	2.11E-04	1.851	9.25E-04
Propylene Oxide	2.90E-05	0.003	24.395	0.012
Toluene	1.30E-04	0.012	109.359	0.055
Xylenes	6.40E-05	0.006	53.838	0.027
Total HAPs	-	**0.099**	**864.212**	**0.432**

[1] HAP emission factors obtained from AP-42 Chapter 3 Section 1, Table 3.1-3 for uncontrolled natural gas-fired turbines.

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Combustion Turbine Startup and Shutdown Emissions

Table J-4.a. Combustion Turbine Startup and Shutdown

Parameter	Value
Startups per year [1]	100
Startups per hour [1]	3
Shutdowns per year [1]	100
Shutdowns per hour [2]	3

[1] Based on EPNG procedure.

[2] Number of shutdowns per hour was conservatively assumed to be equal to number of startups per hour.

Table J-4.b. Combustion Turbine Startup Emissions

Pollutant	Emission Factor [1,2]	Hourly Emissions	Annual Emissions
	(lb/event)	(lb/hr)	(tpy)
NO_x	1.00	3.00	0.05
CO	45.00	135.00	2.25
VOC	4.00	12.00	0.20
UHC	20.00	60.00	1.00
CH_4 [3]	16.00	48.00	0.80
CO_2	437.00	1,311.00	21.85

[1] Values obtained from Solar Turbines Product Information Letter 170 for Mars 90 13000S CS/MD dated 12/01/2016.

[2] Assumes ISO conditions (59°F, 60% relative humidity, sea level, no losses) with natural gas fuel.

[3] Methane emissions calculated as the difference between UHC and VOC emissions.

Table J-4.c. Combustion Turbine Shutdown Emissions

Pollutant	Emission Factor [1,2,3]	Hourly Emissions	Annual Emissions
	(lb/event)	(lb/hr)	(tpy)
NO_x	1.00	3.00	0.05
CO	79.00	237.00	3.95
VOC	5.00	15.00	0.25
UHC	26.00	78.00	1.30
CH_4 [4]	21.00	63.00	1.05
CO_2	674.00	2,022.00	33.70

[1] Values obtained from Solar Turbines Product Information Letter 170 for Mars 90 13000S CS/MD dated 12/01/2016.

[2] Assumes ISO conditions (59°F, 60% relative humidity, sea level, no losses) with natural gas fuel.

[3] Assumes that the unit is operating at >50% load prior to shutdown.

[4] Methane emissions calculated as the difference between UHC and VOC emissions.

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Combustion Turbine Startup and Shutdown Emissions

Table J-4.d. Combustion Turbine Emissions Summary

Pollutant	Total Hourly Emissions [1] (lb/hr)	Total Annual Emissions [2] (tpy)
NO_x	6.00	0.10
CO	372.00	6.20
VOC	27.00	0.45
UHC	138.00	2.30
CH_4 [3]	111.00	1.85
CO_2	3,333.00	55.55
CO_2e	6,108.00	101.80

[1] Total emissions are the sum of the maximum hourly emissions for startup and shutdown based on the maximum number of startups per hour as dictated by EPNG procedure.

[2] Total emissions are the sum of the maximum annual emissions for startup and shutdown based on the maximum number of startups and shutdowns per year as dictated by EPNG procedure.

[3] Methane emissions calculated as the difference between UHC and VOC emissions.

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Emergency Generator Engine Emissions

Table J-5.a. Emergency Generator Engine Specifications

Parameter	Value
Fuel	Natural Gas
Horsepower (hp) [1]	1,106
Annual hours of operation (hr) [2]	500
Maximum heat input (MMBtu/hr) [3]	4.69
Annual fuel consumption (MMBtu/yr)	2,344.90

[1] Value obtained by converting 750-kW to hp and applying a 10% safety factor.

[2] 500 hours is the threshold for an emergency generator to be considered insignificant according to A.A.C. R18-2-101.68.b.

[3] Based on a conversion of 1 hp to 2,544.43 BTU/hr and a 60% thermal efficiency for an Otto cycle (spark ignition) engine.

Table J-5.b. Emergency Generator Engine Emissions - Criteria Pollutants and Greenhouse Gases

Pollutant	Emission Factor (g/bhp-hr)	Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Emission Rate (tpy)
NO_X [1]	2.00	-	4.876	1.219
CO [1]	4.00	-	9.752	2.438
VOC [1]	1.00	-	2.438	0.610
PM (condensable) [2]	-	9.99E-03	0.047	0.012
PM_{10} (filterable) [2]	-	7.71E-05	3.62E-04	9.04E-05
$PM_{2.5}$ (filterable) [2]	-	7.71E-05	3.62E-04	9.04E-05
SO_2 [2]	-	5.88E-04	0.003	6.89E-04
CH_4 [3]	-	0.0022	0.010	0.003
N_2O [3]	-	0.0002	0.001	2.58E-04
CO_2 [4]	-	116.98	548.600	137.150
CO_2e [5]	-	117.10	549.167	137.292

[1] Emission factor based on the gram per brake-horsepower-hour (g/bhp-hr) uncontrolled rates. Engine would meet the emission standards of NSPS JJJJ for a natural gas-fired emergency engine ≥ 130-hp manufactured after 01/01/2009.

[2] Emission factor obtained from AP-42 Chapter 3 Section 2, Table 3.2-2 for 4-stroke lean-burn engines.

[3] Emission factor obtained from 40 CFR 98 Subpart C, Table C-2 for natural gas.

[4] Emission factor obtained from 40 CFR 98 Subpart C, Table C-1 for natural gas.

[5] Global warming potentials obtained from Table A-1 to Subpart A of Part 98 - Global Warming Potentials Equation A-1:

$CO_2e = \sum GHGi \times GWPi$

Where:

CO_2e = Carbon dioxide equivalent (tons/year)

GHGi = Mass emissions of each GHG (tons/year)

GWPi = Global warming potential for each GHG (1 for CO_2; 25 for CH_4; 298 for N_2O)

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Emergency Generator Engine Emissions

Table J-5.c. Emergency Generator Engine Emissions - Hazardous Air Pollutants

Pollutant	Emission Factor [1] (lb/MMBtu)	Emission Rate (lb/hr)	Emission Rate (lb/yr)	Emission Rate (tpy)
1,1,2,2-Tetrachloroethane	4.00E-05	1.88E-04	0.094	4.69E-05
1,1,2-Trichloroethane	3.18E-05	1.49E-04	0.075	3.73E-05
1,3-Butadiene	2.67E-04	0.001	0.626	3.13E-04
1,3-Dichloropropene	2.64E-05	1.24E-04	0.062	3.10E-05
2-Methylnaphthalene	3.32E-05	1.56E-04	0.078	3.89E-05
2,2,4-Trimethylpentane	2.50E-04	0.001	0.586	2.93E-04
Acenaphthene	1.25E-06	5.86E-06	0.003	1.47E-06
Acenaphthylene	5.53E-06	2.59E-05	0.013	6.48E-06
Acetaldehyde	8.36E-03	0.039	19.603	0.010
Acrolein	5.14E-03	0.024	12.053	0.006
Benzene	4.40E-04	0.002	1.032	5.16E-04
Benzo(b)fluoranthene	1.66E-07	7.79E-07	3.89E-04	1.95E-07
Benzo(e)pyrene	4.15E-07	1.95E-06	9.73E-04	4.87E-07
Benzo(g,h,i)perylene	4.14E-07	1.94E-06	9.71E-04	4.85E-07
Biphenyl	2.12E-04	9.94E-04	0.497	2.49E-04
Carbon Tetrachloride	3.67E-05	1.72E-04	0.086	4.30E-05
Chlorobenzene	3.04E-05	1.43E-04	0.071	3.56E-05
Chloroform	2.85E-05	1.34E-04	0.067	3.34E-05
Chrysene	6.93E-07	3.25E-06	0.002	8.13E-07
Ethylbenzene	3.97E-05	1.86E-04	0.093	4.65E-05
Ethylene Dibromide	4.43E-05	2.08E-04	0.104	5.19E-05
Fluoranthene	1.11E-06	5.21E-06	0.003	1.30E-06
Fluorene	5.67E-06	2.66E-05	0.013	6.65E-06
Formaldehyde	5.28E-02	0.248	123.811	0.062
Methanol	2.50E-03	0.012	5.862	0.003
Methylene Chloride	2.00E-05	9.38E-05	0.047	2.34E-05
n-Hexane	1.11E-03	0.005	2.603	0.001
Naphthalene	7.44E-05	3.49E-04	0.174	8.72E-05
PAH	2.69E-05	1.26E-04	0.063	3.15E-05
Phenanthrene	1.04E-05	4.88E-05	0.024	1.22E-05
Phenol	2.40E-05	1.13E-04	0.056	2.81E-05
Pyrene	1.36E-06	6.38E-06	0.003	1.59E-06
Styrene	2.36E-05	1.11E-04	0.055	2.77E-05
Tetrachloroethane	2.48E-06	1.16E-05	0.006	2.91E-06
Toluene	4.08E-04	0.002	0.957	4.78E-04
Vinyl Chloride	1.49E-05	6.99E-05	0.035	1.75E-05
Xylene	1.84E-04	8.63E-04	0.431	2.16E-04
Total HAPs	-	**0.339**	**169.291**	**0.085**

[1] HAP emission factors obtained from AP-42 Chapter 3 Section 2, Table 3.2-2 for 4-stroke lean-burn engines.

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Fugitive Emissions

Table J-6. Fugitive Emissions from Piping Components During Normal Operation

Equipment Type	Component Count [1,2]	Emission Factor [3]	VOC Emissions		H_2S Emissions		CH_4 Emissions		CO_2 Emissions		CO_2e Emissions	
			Hourly Emissions	Annual Emissions [4]	Hourly Emissions	Annual Emissions [4]	Hourly Emissions	Annual Emissions [4]	Hourly Emissions	Annual Emissions [4]	Hourly Emissions	Annual Emissions [4]
		(lb/hr/source)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Valves	282.7	9.92E-03	0.087	0.383	5.53E-06	2.42E-05	2.414	10.575	0.031	0.138	60.389	264.506
Others	33.0	1.94E-02	0.020	0.087	1.26E-06	5.53E-06	0.551	2.414	0.007	0.031	13.785	60.380
Connectors	810.7	4.41E-04	0.011	0.049	7.05E-07	3.09E-06	0.308	1.348	0.004	0.018	7.697	33.712
Flanges	132.0	8.60E-04	0.004	0.015	2.24E-07	9.80E-07	0.098	0.428	0.001	0.006	2.444	10.704
Open-ended lines	15.4	4.41E-03	0.002	0.009	1.34E-07	5.87E-07	0.058	0.256	7.61E-04	0.003	1.462	6.404
		Total	**0.124**	**0.543**	**7.86E-06**	**3.44E-05**	**3.429**	**15.020**	**0.045**	**0.195**	**85.778**	**375.706**

[1] Component counts obtained from GRI-HAPCalc 3.01's default compressor station.

[2] A 10% safety factor was added to conservatively account for the fittings and equipment unique to this site.

[3] Emission factors obtained from Table 2-4 of *Protocol for Equipment Leak Emission Estimates* (EPA Document, EPA-453/R-95-017, November 1995) for gas service.

[4] Annual emissions were calculated based on continuous operation of 8,760 hours/year.

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Unit Blowdown Emissions

Table J-7. Unit Blowdown Emissions

Event Type	Estimated Maximum Number of Events [1]	Volume of Gas Released [2]		VOC Emissions [3]		H_2S Emissions [3]		CH_4 Emissions [3]		CO_2 Emissions [3]		CO_2e Emissions	
	(events/yr)	(MSCF/event)	(MSCF/yr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Total Station Emergency Shutdowns	20	664	13280	1.395	6.110	8.84E-05	3.87E-04	38.565	168.916	0.502	2.198	964.634	4225.098
Compressor Unit Blowdowns	80	43	3440	0.361	1.583	2.29E-05	1.00E-04	9.990	43.755	0.130	0.569	249.875	1094.453
TOTAL	-	-	**16,720**	**1.756**	**7.693**	**1.11E-04**	**4.87E-04**	**48.555**	**212.671**	**0.632**	**2.767**	**1214.509**	**5319.551**

[1] The number of events was based on operation of similar sites operated by EPNG.

[2] The volume of gas released per event was estimated based on engineering process knowledge and the operation of similar sites operated by EPNG.

[3] Emissions based on the density of specific gravity of natural gas at the altitude of the facility and the percentage by weight speciation of the pollutant.

El Paso Natural Gas Company, LLC
Dragoon Compressor Station
Pig Launching and Receiving Emissions

Table J-8. Pig Launching and Receiving Emissions

Event Type	Estimated Maximum Number of Events [1]	Volume of Gas Released [2]		VOC Emissions [3]		H_2S Emissions [3]		CH_4 Emissions [3]		CO_2 Emissions [3]		CO_2e Emissions	
	(events/yr)	(MSCF/event)	(MSCF/yr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Pig Launching	2	9.26	18.52	0.002	0.009	1.23E-07	5.40E-07	0.054	0.236	7.00E-04	0.003	1.345	5.892
Pig Receiving	2	9.26	18.52	0.002	0.009	1.23E-07	5.40E-07	0.054	0.236	7.00E-04	0.003	1.345	5.892
TOTAL	-	-	**37.04**	**0.004**	**0.017**	**2.46E-07**	**1.08E-06**	**0.108**	**0.471**	**0.001**	**0.006**	**2.691**	**11.785**

[1] The number of events was based on operation of similar sites operated by EPNG.

[2] The volume of gas released per event was estimated based on engineering process knowledge and the operation of similar sites operated by EPNG.

[3] Emissions based on the density of specific gravity of natural gas at the altitude of the facility and the percentage by weight speciation of the pollutant.

ATTACHMENT K – SUPPORTING TECHNICAL DOCUMENTATION

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer	Engine Model: MARS 90-13000S CS/MD 59F MATCH
Job ID	
Inquiry Number	Fuel Type: SD NATURAL GAS; Water Injection: NO
Run By: David A Pocengal; Date Run: 22-Mar-17	Engine Emissions Data: REV. 1.0

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 12604 HP 100.0% Load; Elev. 4467 ft; Rel. Humidity 60.0%; Temperature 0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	25.25	25.62	14.67
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr)	0.61	0.62	0.36
(gas turbine shaft pwr) lbm/hr	5.76	5.85	3.35
2 — 12196 HP 100.0% Load; Elev. 4467 ft; Rel. Humidity 60.0%; Temperature 20.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	24.46	24.82	14.21
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr)	0.61	0.62	0.36
(gas turbine shaft pwr) lbm/hr	5.58	5.67	3.25
3 — 11661 HP 100.0% Load; Elev. 4467 ft; Rel. Humidity 60.0%; Temperature 40.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	23.50	23.85	13.66
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr)	0.62	0.63	0.36
(gas turbine shaft pwr) lbm/hr	5.37	5.44	3.12

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg C, and between 50% and 100% load for gas, fuel, and between 65% and 100% load for liquid fuel (except f or the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg C and betwee
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer	Engine Model: MARS 90-13000S CS/MD 59F MATCH
Job ID	
Inquiry Number	Fuel Type: SD NATURAL GAS; Water Injection: NO
Run By: David A Pocengal; Date Run: 22-Mar-17	Engine Emissions Data: REV. 1.0

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
4 — 10874 HP 100.0% Load — Elev. 4467 ft — Rel. Humidity 60.0% — Temperature 59.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	22.17	22.49	12.88
lbm/MMBtu (Fuel LHV)	0.060	0.060	0.035
lbm/(MW-hr)	0.62	0.63	0.36
(gas turbine shaft pwr) lbm/hr	5.06	5.14	2.94
5 — 9708 HP 100.0% Load — Elev. 4467 ft — Rel. Humidity 60.0% — Temperature 80.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	20.33	20.63	11.82
lbm/MMBtu (Fuel LHV)	0.059	0.060	0.034
lbm/(MW-hr)	0.64	0.65	0.37
(gas turbine shaft pwr) lbm/hr	4.64	4.71	2.70
6 — 8603 HP 100.0% Load — Elev. 4467 ft — Rel. Humidity 60.0% — Temperature 100.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	18.58	18.86	10.80
lbm/MMBtu (Fuel LHV)	0.058	0.059	0.034
lbm/(MW-hr)	0.66	0.67	0.38
(gas turbine shaft pwr) lbm/hr	4.24	4.31	2.47

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg C, and between 50% and 100% load for gas, fuel, and between 65% and 100% load for liquid fuel (except f or the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg C and betwee
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED ENGINE PERFORMANCE

Customer	Model: MARS 90-13000S
Job ID	Package Type: CS/MD
Run By: David A Pocengal — Date Run: 22-Mar-17	Match: 59F MATCH
Engine Performance Code: REV. 4.17.1.19.11 — Engine Performance Data: REV. 2.1	Fuel System: GAS
	Fuel Type: SD NATURAL GAS

DATA FOR NOMINAL PERFORMANCE

Elevation	feet	4467
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	4.0
Accessory on GP Shaft	HP	27.8

		1	2	3	4	5	6
Engine Inlet Temperature	deg F	0	20.0	40.0	59.0	80.0	100.0
Relative Humidity	%	60.0	60.0	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	8949	8896	8816	8703	8567	8417
Specified Load	HP	FULL	FULL	FULL	FULL	FULL	FULL
Net Output Power	HP	12604	12196	11661	10874	9708	8603
Fuel Flow	mmBtu/hr	96.04	93.12	89.66	84.90	78.50	72.74
Heat Rate	Btu/HP-hr	7619	7636	7689	7808	8086	8455
Therm Eff	%	33.394	33.323	33.091	32.587	31.466	30.092
Engine Exhaust Flow	lbm/hr	299175	290450	279835	266618	247490	228171
PT Exit Temperature	deg F	826	842	861	876	901	928
Exhaust Temperature	deg F	826	842	861	876	901	928

Fuel Gas Composition (Volume Percent)

Methane (CH4)	92.79
Ethane (C2H6)	4.16
Propane (C3H8)	0.84
N-Butane (C4H10)	0.18
N-Pentane (C5H12)	0.04
Hexane (C6H14)	0.04
Carbon Dioxide (CO2)	0.44
Hydrogen Sulfide (H2S)	0.0001
Nitrogen (N2)	1.51

Fuel Gas Properties

LHV (Btu/Scf)	939.2	Specific Gravity	0.5970	Wobbe Index at 60F	1215.6

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Emission Estimates at Start-up, Shutdown, and Commissioning for SoLoNOx Combustion Products

Leslie Witherspoon
Solar Turbines Incorporated

PURPOSE

The purpose of this Product Information Letter (PIL) is to provide emission estimates for start-up and shutdown events for *Solar*® gas turbines with *SoLoNOx*™ dry low emissions combustion systems. The commissioning process is also discussed.

INTRODUCTION

The information presented in this document is representative for both generator set (GS) and compressor set / mechanical drive (CS/MD) combustion turbine applications. Operation of duct burners and/or any add-on control equipment is not accounted for in the emissions estimates. Emissions related to the start-up, shutdown, and commissioning of combustion turbines will not be warranted. The estimates in this document are based on limited engine testing and analysis. The estimates are most commonly used for potential to emit calculations to determine air permitting status. **Solar discourages customers from accepting the estimates as start-up and shutdown event permit limits.**

Combustion turbine start-up occurs in one of three modes: cold, warm, or hot. The nominal start-up duration for a hot, warm, or cold start is the same for a *Solar* turbine.

The start-up and shutdown time for a *Solar* turbine in a simple-cycle or combined heat and power application is the same. Heat recovery steam generator (HRSG) steam pressure is usually 250 psig or less. At 250 psig or less, thermal stress within the HRSG is minimized and, therefore, firing ramp-up/ramp-down is not limited. However, some combined heat and power plant applications will desire or dictate longer start-up/shutdown times due to external requirements.

Start-up and shutdown emissions estimates for the *Mercury*™ 50 engine are found in PIL 205.

For start-up and shutdown emissions estimates for conventional combustion turbines, landfill gas, digester gas, or other alternative fuel applications, contact Solar's Environmental Programs Department.

START-UP SEQUENCE

The start-up sequence and attaining *SoLoNOx* combustion mode, takes three steps:

1. Purge-crank
2. Ignition and acceleration to idle
3. Loading / thermal stabilization

During the "purge-crank" step, rotation of the turbine shaft is accomplished with a starter motor to remove any residual fuel gas in the engine flow path and exhaust. During

"ignition and acceleration to idle," fuel is introduced into the combustor and ignited in a diffusion flame mode and the engine rotor is accelerated to idle speed.

The third step consists of applying up to 50% load[1] while allowing the combustion flame to transition and stabilize. Once 50% load is achieved, the turbine transitions to *SoLoNOx* combustion mode and the engine control system begins to maintain the combustion primary zone temperature and limit pilot fuel to achieve the targeted nitrogen oxides (NOx), carbon monoxide (CO), and unburned hydrocarbons (UHC) emission levels.

SHUTDOWN PROCESS

Normal, planned cool down/shutdown duration varies by engine model. Once the shutdown process starts the engine unloads and moves into a cooldown mode.

START-UP AND SHUTDOWN EMISSIONS ESTIMATES

Tables 1 through 3 summarize the estimated pounds of emissions per start-up and shutdown event for each SoLoNOx product. The mass emissions estimates are calculated using empirical exhaust characteristics. The estimates in Tables 1-3 are representative of production units ordered from 2006 to present. In mid to late 2017 Solar will begin a transition to a new control regime that will result in lower CO and UHC values at lower loads thus reducing the estimated emissions per start-up and shutdown sequence. The *Titan*™ 250 has the new control scheme and thus estimated emissions will not change. As testing is completed and other models/ratings are qualified and able to be equipped with the updated controls, additional tables will be added to PIL 170. Unfortunately for turbines going through the air permitting process now that will be equipped with updated controls we are unable to provide emissions estimates until the testing and qualification is complete. Please contact Environmental Programs, Leslie Witherspoon (858.694.6609) or Anthony Pocengal (858.505.8554) for support.

COMMISSIONING EMISSIONS

Commissioning generally takes place over a two-week period. Static testing, where no combustion occurs, usually requires one week and no emissions are expected. Dynamic testing, where combustion will occur, typically includes a number of engine start and shutdown cycles and a variety of loads will be placed on the system. It is impossible to predict how long the turbine will run and in what combustion / emissions mode it will be running. The dynamic testing period is generally followed by one to two days of final commissioning during which the turbine is running at various loads.

Solar Turbines Incorporated
9330 Sky Park Court
San Diego, CA 92123-5398

[1] 40% load for the *Titan* 250 engine on natural gas. 65% load for all engines on liquid fuel (except 80% load for the *Centaur* 40).

Table 1. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx Generator Set Applications
Nominal Start-up and Shutdown, Natural Gas Fuel

Data will NOT be warranted under any circumstances

	Centaur 40 4701S					Centaur 50 6201S					Taurus 60 7901S					Taurus 65 8401S				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	2	158	83	17	247	1	67	84	17	333	1	86	110	22	338	1	73	66	13	362
Total Emissions per Shutdown (lbs)	2	149	74	15	286	1	65	75	15	367	1	79	92	18	392	1	72	53	11	421

	Taurus 70 10801S					Mars 90 13000S GSC					Mars 100 16000S GSC					Titan 130 20501S				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	1	78	67	13	544	1	84	41	8	640	1	81	39	8	669	3	172	138	28	832
Total Emissions per Shutdown (lbs)	1	77	52	10	513	1	91	33	7	711	1	91	33	7	775	3	169	111	22	961

	Titan 130 22401S					Titan 250 30000S GSC				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	2	101	75	15	883	2	38	14	3	1445
Total Emissions per Shutdown (lbs)	2	106	63	13	1005	2	23	9	2	1200

Assumes ISO conditions: 59F, 60% RH, sea level, no losses

Assumes unit is operating at >50% load prior to shutdown.

Assumes natural gas fuel; ES 9-98 compliant.

Table 2. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx CS/MD Applications
Nominal Start-up and Shutdown, Natural Gas Fuel

Data will NOT be warranted under any circumstances

	Centaur 40 4702S					Centaur 50 6102S					Taurus 60 7802S				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	1	48	24	5	188	0.3	21	17	3	184	0.4	22	17	3	180
Total Emissions per Shutdown (lbs)	1	81	37	7	285	1	37	23	5	318	1	40	25	5	319

	Taurus 70 10802S					Mars 90 13000S CS/MD					Mars 100 16000S CS/MD				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	1	88	88	18	381	1	45	20	4	437	1	46	20	4	385
Total Emissions per Shutdown (lbs)	1	62	40	8	473	1	79	26	5	674	1	82	26	5	676

	Titan 130 20502S					Titan 130 22402S					Titan 250 30000S CS/MD				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	1	55	37	7	662	1	70	50	10	690	2	32	12	2	1135
Total Emissions per Shutdown (lbs)	2	91	46	9	945	2	104	54	11	1044	2	21	8	2	1122

Assumes ISO conditions: 59F, 60% RH, sea level, no losses.

Assumes unit is operating at >50% load prior to shutdown.

Assumes natural gas fuel; ES 9-98 compliant.

Table 3. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx Generator Set Applications
Nominal Start-up and Shutdown, Liquid Fuel (Diesel #2)

Data will NOT be warranted under any circumstances

	Centaur 40 4701S					Centaur 50 6201S					Taurus 60 7901S				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	4	140	23	23	419	3	130	22	22	472	4	147	25	25	483
Total Emissions per Shutdown (lbs)	4	126	21	21	452	3	103	17	17	536	4	116	19	19	580

	Taurus 70 10801S					Mars 100 16000S GSC					Titan 130 20501S				
	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2	NOx	CO	UHC	VOC	CO2
Total Emissions per Start (lbs)	6	251	42	42	754	4	119	20	20	854	8	336	57	57	1164
Total Emissions per Shutdown (lbs)	4	144	24	24	737	5	128	20	20	1135	8	265	44	44	1374

Assumes ISO conditions: 59F, 60% RH, sea level, no losses.

Assumes unit is operating at >50% load prior to shutdown.

Assumes #2 Diesel fuel; ES 9-98 complaint.

ATTACHMENT L – LISTING OF INSIGNIFICANT ACTIVITIES

ADEQ Air Permit Renewal
Non-Exclusive List of Insignificant Activities.

Activities that may generate emissions in insignificant amounts include but are not limited to the following:

a. Liquid Storage and Piping
   i. Petroleum product storage tanks containing the following substances: diesel fuels and fuel oil in storage tanks with capacity of 40,000 gallons or less, lubricating oil, transformer oil, and used oil.
   ii. Gasoline storage tanks with capacity of 10,000 gallons or less.
   iii. Storage and piping of natural gas, butane, propane, or liquified petroleum gas.
   iv. Piping of fuel oils, used oil and transformer oil.
   v. Storage and handling of drums or other transportable containers where the containers are sealed during storage, and covered during loading and unloading, including containers of waste and used oil regulated under the federal Resource Conservation and Recovery Act, 42 U.S.C. 6901-6992k.
   vi. Storage tanks of any size containing exclusively soaps, detergents, waxes, greases, aqueous salt solutions, aqueous solutions of acids that are not regulated air pollutants, or aqueous caustic solutions.
   vii. Electrical transformer oil pumping, cleaning, filtering, drying and the re-installation of oil back into transformers.

b. Internal combustion engine-driven compressors, internal combustion engine-driven electrical generator sets, and internal combustion engine-driven water pumps used for less than 500 hours per calendar year for emergency replacement or standby service.

c. Low Emitting Processes
   i. Batch mixers with rated capacity of 5 cubic feet or less.
   ii. Powder coating operations.
   iii. Equipment using water, water and soap or detergent, or a suspension of abrasives in water for purposes of cleaning or finishing.
   iv. Blast-cleaning equipment using a suspension of abrasive in water and any exhaust system or collector serving them exclusively.
   v. Plastic pipe welding.

d. Site Maintenance
   i. Housekeeping activities and associated products used for cleaning purposes, including collecting spilled and accumulated materials at the source, including operation of fixed vacuum cleaning systems specifically for such purposes.
   ii. Sanding of streets and roads to abate traffic hazards caused by ice and snow.
   iii. Street and parking lot striping.
   iv. Architectural painting and associated surface preparation for maintenance purposes at industrial or commercial facilities.
   v. Steam cleaning.

e. Sampling and Testing

i. Noncommercial (in-house) experimental, analytical laboratory equipment which is bench scale in nature, including quality control/quality assurance laboratories supporting a stationary source and research and development laboratories.

ii. Individual sampling points, analyzers, and process instrumentation, whose operation may result in emissions but that are not regulated as emission units.

f. Ancillary Non-Industrial Activities

i. General office activities, such as paper shredding, copying, photographic activities, and blueprinting, but not to include incineration.

ii. Use of consumer products, including hazardous substances as that term is defined in the Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) where the product is used at a source in the same manner as normal consumer use.

iii. Activities directly used in the diagnosis and treatment of disease, injury or other medical condition.

g. Miscellaneous Activities

i. Installation and operation of potable, process and waste water observation wells, including drilling, pumping, filtering apparatus.

ii. Transformer vents.

iii. Operation of oil/water/scrubber liquid systems

iv. Operation of cooling water, plant water, wastewater, and other water systems

v. Cathodic Protection Systems

vi. Natural Gas Blowdowns

vii. Operation of Battery Systems

viii. Operation of natural gas fired appliances rated less than 1 MMBtu/hr

ix. Operation of vents, valves, and flanges